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Better Than a Thermometer?

By Bob Hacker

You say, "What could be better for checking the temperature than a good, old-fashioned thermometer?" Well... let me tell you. You need to get yourself a hobo! But don't get just any hobo. You need a "HOBO" H8 Pro Temperature Logger manufactured by the Onset Computer Corporation of Bourne, Massachusetts.



Figure 1, "HOBO" Temperature Data Logger mounted above our soundless bath.

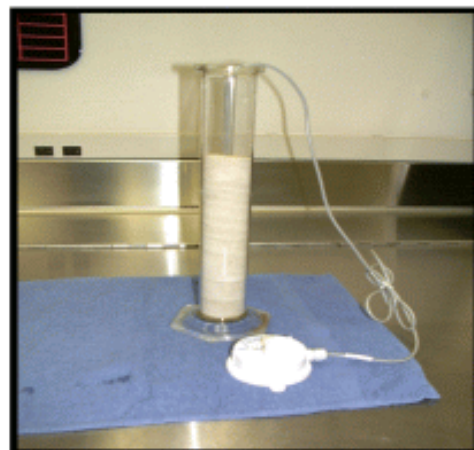
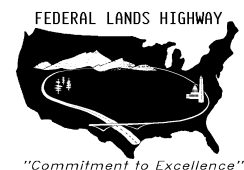


Figure 3, Data logger in foreground with the temperature probe inserted in a glass cylinder to protect it from moisture.



Federal Highway Administration



We use several different thermometers in Western's Materials Laboratory. But when the American Association of State Highway and Transportation Officials (AASHTO) specifications for T 104-99 (Soundness of Aggregate Test) changed, we found we needed an instrument capable of recording temperature readings every ten minutes, for five days, with an accuracy of $\pm 0.3^{\circ}$ Celsius (C). A tall order you say.... very expensive you say? We initially thought that might be the situation. Then we discovered the "HOBO" and purchased it for less than \$300.00, including the software to run it. With an accuracy of $\pm 0.2^{\circ}\text{C}$ and a temperature range from -30°C to $+50^{\circ}\text{C}$, the "HOBO" will record the temperature of the sodium sulfate soundness solution in the soundness bath and the ambient temperature of the laboratory simultaneously.



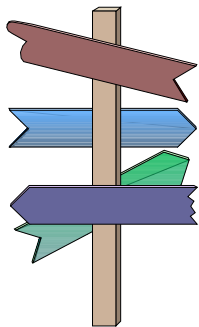
Figure 3, Glass cylinder inserted in the soundness bath with the temperature probe installed.

The "HOBO" is easy to use and program. It has a battery life of 3 years and is drop-proof from 5 feet. We position the "HOBO" on the wall above the soundness bath and place the 6-foot long temperature probe in the bath. Set to take readings every ten minutes, the "HOBO" can record continuously for 265 days before it needs to be downloaded. Temperature sampling intervals can be selected by the user and range from 0.5 seconds to 9 hours, with recording times as long as 3 years. The user can also select standard or high resolution readings in Celsius or Fahrenheit or choose to have both settings, each recording Celsius and Fahrenheit temperatures. The technician can remove the temperature probe from the soundness bath and download the information from the logger to a PC using Onset's BOXCAR PRO 4.0 software. The starting date and time can be programmed and seven previous deployments of the logger are automatically archived. Temperature plots can be shown on the computer screen and a text index can be viewed that indicates the numeric readings for the time interval and temperatures selected. The technician is able to modify and add text to each graph and print any data required. The data can then be stored in the computer for future reference or deleted.

The “HOBO” is not unique. Several different companies make and sell temperature data loggers. We chose the “HOBO” for our lab because it met the T 104-99 specification for accuracy, temperature recording frequency/duration and because it is relatively inexpensive.

There are other types of data loggers available that can record rainfall, humidity, pressure and carbon dioxide. Will the data logger replace the thermometer? I don’t think so. Thermometers are a great tool in the materials laboratory for checking temperature accurately and quickly. However, if you need multiple, extended, accurate temperature readings with recording capabilities, you might want a “HOBO.”

ROAD SIGNS



"Do you know what the difference between rats and humans is? When a rat tries something and it doesn't work, it tries something else."

- - Guy Genin

We wish to thank all the individuals who have contributed articles for previous newsletters. If you are aware of a new technology, (or a fresh spin on an old one) please jot down your ideas and submit them via e-mail to me at the address below. Or, if you have an aversion to writing, just donate 15 minutes of your time for an interview (either by phone or in person), and I’ll format the information for you. You can then review the article for accuracy (via e-mail or hard copy) and upon publication, you’ll become famous in a matter of days. Remember, although we cater to road-related technology, ANY new technology information is welcome.

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